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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/713,420	11/15/2000	Mark John McGrath	450110-02761	3356
20999	7590	10/27/2003	EXAMINER	
FROMMER LAWRENCE & HAUG 745 FIFTH AVENUE- 10TH FL. NEW YORK, NY 10151			FLETCHER, JAMES A	
			ART UNIT	PAPER NUMBER
			2615	11

DATE MAILED: 10/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/713,420

Applicant(s)

MCGRATH, MARK JOHN

Examiner

James A. Fletcher

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14, 16-33 and 35-42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14, 16-33 and 35-42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 November 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 22 September 2003 have been fully considered but they are not persuasive.

In re page 15, applicant's representative states that the invention is patentable over Veltman because Veltman uses auxiliary data to decode main data and "is essential to the decoding of the main data and must therefore be included in the combined stream," as contrasted with the invention's auxiliary data which is non-essential.

In response, the examiner respectfully disagrees. Although Veltman states several times that the auxiliary data is for use in decoding the information stream, he makes no assertions that the auxiliary data is essential to that purpose. In fact, Veltman states that "The auxiliary information may be directory information for the information stream..." See page 42, lines 19-20. He continues on page 60, "The encoder also includes directory information in the multiplexed bit stream to enable programs selections to be located, and to enable pictures to be displayed in fast forward and fast rewind operations." Clearly, locating program selections, and display in fast forward and fast rewind operations are desirable conveniences, but are not "essential to the decoding of the main data, and must therefore be included in the combined data stream." However, it clearly constitutes a descriptive metadata with the main data stream of compression encoded source data.

Veltman further states that the "approach allows many different types of auxiliary information streams to be included in the multiplexed bit stream." See page 53, line 25 and page 54, line 1.

In re pages 16 and 17, applicant's representative goes on to state that Yamagishi is in a "different application to that of the present invention," stating that Yamagishi relates to a "jump reproduction of a moving picture," where the present invention is a method of transmitting non-essential metadata without stream degradation.

The examiner respectfully wishes to point out that Yamagishi, in accomplishing his goal, records access data relating to non-contiguous frames of data, as illustrated by only recording access data for odd numbers of GOP I frames. Since Veltman records non-essential data as metadata linked (concatenated) with the bit stream, and Yamagishi stores compressed metadata relating to two or more non-contiguous frames of video data, the combination meets the limitations of the described invention of using metadata relating to two or more non-contiguous frames of video data.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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3. Claims 1-4, 8-14, 16, 19-23, 27-30, 33, 35, and 38 rejected under 35 U.S.C. 103(a) as being unpatentable over Veltman (WO 94/30014) in further view of Yamagishi et al (5,535,008).

Regarding claims 1 and 20, Veltman discloses a signal processor and signal processing method comprising:

- a data compression encoder which operates to compression encode source data into compression encoded data having a variable compressed data rate (Page 40 lines 20-25 "a method of generating a bit stream by multiplexing non-compressed auxiliary information with an information stream. The information stream is obtained by compressing fixed-size units of an information signal with a varying compression ratio to provide varying-sized units of the information stream");
- a multiplexer coupled to the data compression encoder and arranged in operation to concatenate the compressed data and descriptive metadata into a concatenated data stream (Page 43, lines 14-16 "A multiplexer sequentially arranges the information stream portions and the auxiliary information portions to provide the bit stream"), the metadata describing the source information (Page 42, lines 19-20 "The auxiliary information may be directory information for the information stream"), and
- a control processor coupled to the multiplexer and arranged in operation to control the multiplexer whereby a combined data rate of the concatenated data stream is less than or equal to a pre-determined maximum (Page 93, lines 20-23

“the video encoder will...generate I-pictures at a reduced rate, i.e., at the rate of $12.5/N$ Hz, if the time stamp coding frequency is reduced”).

- Veltman fails to particularly and clearly disclose a processor and method whereby descriptive metadata is concatenated with compressed data corresponding to two or more non-contiguous frames of video data.

Yamagishi teaches storing of compressed data corresponding to two or more non-contiguous frames of video data (Col 18, lines 28-32 “Recorded in all the sectors in which Nth GOP is recorded as the I frame access data is the first sector No. in which for example, each I frame of the N+1th, N+3th, N+5th, N-5th, N-3th and N-1th GOP is recorded”). As taught by Yamagishi, the use of storing data corresponding to non-contiguous frames of video data permits a reproducing apparatus to jump from I frame to I frame quickly. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to store data corresponding to non-contiguous frames of video data, providing the means to perform high speed reproduction with I frames.

Regarding claims 2 and 21, Veltman discloses a signal processor and method wherein the data compression encoder generates the compression encoded data in accordance with a compression encoding algorithm, the compressed data rate being varied by the compression encoding algorithm in dependence upon the content of the source data (Page 108 line 21 - Page 109 line 8 describes an encoder that would reduce its data output to a very low rate when presented with a nearly static scene. Also, Page 107 line 23-Page 108 line 1 “when all the video input signal has been

converted into the multiplexed bit stream...the encoder may continue to generate other packets if data streams for such packets are still to be inserted in [the data stream]").

Regarding claims 3 and 22, Veltman discloses a signal processor and method wherein the compressed data rate is varied by the compression encoding algorithm in dependence upon an estimated comparison of the source data and a version of the source data produced by decompressing the compression encoded data (Page 43, lines 16-20 "The multiplexer includes a controller that controls the information stream divider and the auxiliary information divider by emulating decoding of the bit stream by a system target decoder").

Regarding claims 4 and 23, Veltman discloses a signal processor and method wherein the control processor influences the compression data rate (Page 115, lines 6-8 "compressing fixed-size units of an information signal with a varying compression ratio to provide varying-sized units of the information stream") whereby a predetermined data rate is provided within the concatenated data stream for the metadata (Page 115, lines 4-5 "multiplexing non-compressed auxiliary information with an information stream").

Regarding claims 8 and 27, Veltman discloses a signal processor and method wherein the compression algorithm:

- generates an encoded representation of the source data, and
- quantizes the encoded data to produce the compression encoded data, wherein the compression encoding algorithm is effected by controlling the quantization of the encoded data representative of the source data to control the compressed data rate (Page 16, lines 14-18 "When each picture of the video signal is

compressed and subject to variable length coding...the amount of video stream produced changes significantly from picture-to-picture, depending on the mode in which the video signal of the picture was compressed").

Regarding claims 9, 10, 28, and 29, Veltman discloses a signal processor and method wherein the encoded representation of the source data is formed using a discrete cosine transform or MPEG (Page 114, lines 2-4 "the invention has...been described with respect to the MPEG-1 and MPEG-2 standards").

Regarding claims 11 and 30, Veltman discloses a signal processor and method wherein the compression encoder produces data as encoded data frames (Page 61, lines 18-22 "The multiplexer assembles the preliminary multiplexed bit stream...into packets, and the packets into packs").

Regarding claims 12 and 31, although Veltman does not specifically describe a signal processor and method wherein the compressor determines the target bit rate as an average target data rate of $TBR_{ave} = (\text{Maximum bit rate} - \text{metadata rate}) / (\text{frames over which the metadata is to be concatenated to the encoded signal})$, the examiner maintains that the equation provided by the applicant is the inherent data rate of a system with the requirements of storing strings of both compressed and uncompressible data over a fixed period of time..

Regarding claims 13 and 32, although Veltman does not specifically disclose a signal processor and method wherein the number of frames over which the metadata is to be concatenated is reduced by 1 upon the encoding of each frame, and the amount of the metadata is reduced by the amount of data symbols in the encoded frame upon

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the encoding of each frame, the examiner maintains that the relationship described by the applicant is inherent in a data storage system wherein the amount of data stored in a single frame is subtracted from the total amount of data to be stored when that frame is written.

Regarding claims 14 and 33, Veltman discloses a signal processor and method wherein the source data is representative of audio or video signals, or both (Page 113, lines 20-25 "The invention has been described with respect to a system in which both audio and video streams are included in the multiplexed bit stream. However, the invention can be applied equally well to systems in which either an audio stream or a video stream is included in the multiplexed bit stream without the other").

Regarding claims 16 and 35, Veltman discloses a signal processor and method wherein:

- the signal processor produces a concatenated data stream of compression encoded data and metadata (Page 8, lines 21-25 "The bit stream...has a multi-layer structure, and includes various headers in a multiplex layer and the audio stream and the video stream in a signal layer. In this structure, plural packs serially arranged in time"), and
- a recording drive records the concatenated data stream onto a recording medium (Page 54, lines 23-24 "The medium can be any medium suitable for storing or distributing a digital bit stream"), the predetermined maximum data rate of the combined data rate of the concatenated data stream being determined in accordance with the bandwidth of the recording medium. The examiner

maintains that a data stream whose bit rate was higher than the capacity of the recording medium would result in a defective recording system. Therefore, a limitation of the data rate to the maximum available in the recording medium is inherent in an operating system.

Regarding claims 19 and 38, Veltman discloses a communications apparatus and method comprising:

- a signal processor that produces a concatenated data stream, including compression encoded source data and metadata (Page 8, lines 21-25 "The bit stream...has a multi-layer structure, and includes various headers in a multiplex layer and the audio stream and the video stream in a signal layer. In this structure, plural packs serially arranged in time"), and
- a transmission channel having a predetermined bandwidth, wherein the predetermined maximum data rate of the concatenated data stream is determined in dependence upon the predetermined bandwidth (The examiner maintains that a data stream whose bit rate was higher than the capacity of the transmission channel would result in a defective recording system. Therefore, a limitation of the data rate to the maximum available in the recording medium is inherent in an operating system).

4. Claims 5 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Veltman and Yamagishi et al as applied to claims 1, 2, and 4 above, and as applied to claims 20 and 23 above, and further in view of Azadegan et al (5,819,004)

Regarding claims 5 and 24, although the combination does not specifically describe a signal processor and method wherein the control processor:

- maintains the compressed data rate at a predetermined minimum, Azadegan et al teaches a processor whose data rate has a specified minimum value (Col 23, lines 8-9 "The minimum bit rate may be specified by the user, depending on the minimum picture quality desired." On a recording medium with a constant speed, a minimum amount of data is required to keep the reader synchronized with the signal from the medium. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to specify a minimum data rate.);
- Veltman discloses a signal processor and method that function by determining a data rate for the metadata from a difference between the predetermined minimum data rate and the predetermined maximum data rate, and concatenates the compressed data and the metadata by concatenating the metadata at the determined rate (Page 107, lines 23-25 "when all the video input signal has been converted into the multiplexed bit stream...the encoder may continue to generate other packets").

5. Claims 17, 18, 36, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Veltman and Yamagishi et al as applied to claims 1 and 20 above, and in further view of Iwamoto et al (5,974,225).

Regarding claims 17 and 36, although the combination does not specifically describe a signal processor and method wherein the data is recorded in helical scan

tracks on the recording medium, Iwamoto et al describes a system that records compressed and metadata in helical scan tracks on a tape. (Col 2, lines 30-34 "a recording means for recording on a predetermined number of slanted tracks on the tape the plurality of data blocks to each of which a GOP identifying code has been added"). This technology is known and readily available, and it would have been obvious to one of ordinary skill in the art at the time of the invention to have used a tape recorder with a helical scan format.

Regarding claims 18 and 37, although neither the combination nor Iwamoto specifically describe a signal processor and method wherein the encoded data is divided into frames and the recording drive operates to record one frame per track, metadata being recorded in the remainder of the track, the examiner takes official notice that the number of pictures, blocks, frames, or groups of pictures recorded on an individual track is a design choice, and is not a patentable feature.

6. Claims 39-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Veltman and Yamagishi et al as applied to claims 1 and 20 above, and further in view of Azadegan.

Regarding claims 39 - 42, although the combination does not specifically describe a computer readable medium with a program that causes the computer to operate the data processing function and method, Azadegan describes such a medium (Col 67, lines 19-22 "The present invention includes a computer program product which is a storage medium including instructions which can be used to program a computer to perform a process of the invention.") Since a computer is a versatile device capable of

a wide variety of functions, it would have been obvious to one of ordinary skill in the art at the time of the invention to have implemented it as a computer program.

7. Claims 6 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Veltman and Yamagishi et al as applied to claims 20 and 23 above, and further in view of Dieterich (6,100,940).

8. **Regarding claims 6 and 25**, although Veltman does not specifically describe a signal processor and method wherein the control processor:

- determines a target data rate dependent upon an amount of the metadata to be concatenated into the concatenated data stream, and
- controls the compression encoder to maintain the target bit rate, Dieterich describes a signal processor that allows the encoder's data rate to be adjusted for varying amounts of metadata (Col 6, lines 40-43 "the side information...can be used by the rate control module"). Since the metadata cannot be compressed, and since it is vital to the proper decoding of the signal, it would have been obvious to one of ordinary skill in the art at the time of the invention to have the compression parameters vary according to the amount of metadata that was required to be recorded or transmitted.

9. Claims 7 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Veltman and Yamagishi et al as applied to claims 1, 2, 20, 23, and 25 above, and further in view of Dieterich.

Regarding claims 7 and 26, although the combination does not specifically describe a signal processor and method wherein the target bit rate is pre-set at a

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percentage of the maximum bit rate and the amount of metadata to be added, Veltman describes a system where the target bit rate is the maximum (Col 6, lines 40-45 "the side information ...can be used by the rate control module to determine whether the buffer fullness is at a state that will allow the use of a finer quantization scale"). In a system with a maximum data rate, having a signal output that does not exceed that data rate is vital to the proper performance of the system. Including a safety margin in that data rate is standard engineering practice. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide a target bit rate that is related to the maximum bit rate.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Fletcher whose telephone number is (703) 305-3464. The examiner can normally be reached on 7:45AM - 5:45PM M-Th, first Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Christensen can be reached at (703) 308-9644.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, DC 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only).


Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA Sixth Floor (Receptionist).

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

JAF
October 27, 2003


VINCENT BOCCIO
PRIMARY EXAMINER